

REMARKS

The indication that claims 17-18 and 20-21 include patentable subject matter is acknowledged with thanks. In reliance thereon, claim 17 has been amended into independent form by adding the subject matter of claims 1 and 15. Allowance of claims 17-18 is respectfully requested.

Claim 14 was rejected under §112, second paragraph, and has been amended as to form. Reconsideration and withdrawal of the rejection are respectfully requested.

Claims 1-13, 15-16, 19, and 22 were rejected as unpatentable over OTSUKA et al. 2002/0044012 in view of STOLFA et al. 5,965,912. Reconsideration and withdrawal of the rejection are respectfully requested.

Claims 1 and 5 include MOS transistors that are in a substrate and that have first gate insulating films, and a MOS type varactor element in the substrate and that has a second gate insulating film, where the second gate insulating film of the varactor element is thinner than the thinnest gate insulating film among the first gate insulating films of the MOS transistors. This is shown, by way of example, in Figures 3A-C that illustrate MOS transistors 1, 2 in Figures 3A-B that have gate insulating films 4 and varactor element 3 in Figure 3C that has a gate insulating film 14 that is thinner than that of the MOS transistors 1, 2.

The Official Action acknowledges that OTSUKA et al. do not disclose here the gate insulating film of the varactor element is thinner than the thinnest gate insulating film among the gate insulating films of the MOS transistors and relies on STOLFA et al. for the suggestion to modify OTSUKA et al. to include this feature.

STOLFA et al. disclose a variable capacitor that includes one MOS transistor with plural fingers. The MOS transistors are shown in Figure 2 as the elements having gate insulating films 52, 54, 56, and 58. The Official Action indicates that the varactor element has a gate insulating film that is thinner than that of the MOS transistors and points to column 3, lines 62-67 and column 4, lines 1-12. STOLFA et al. disclose that the thickness of the gate dielectric layers 52, 54, 56, and 58 determines the maximum capacitance of the capacitor 10 (which includes all the elements having the gate insulating films 52, 54, 56, and 58).

The reference refers at column 4, line 12 to "The thickness of the gate dielectric layers" (emphasis added), clearly implying that these layers have the same thickness.

The reference also states at column 4, lines 22-26 that the steps for forming the dielectric layer, conductive layer and gate structures can be performed in the same steps as those forming the gate structure of a MOSFET (not shown). That is, the

gate dielectric layers 52, 54, 56, and 58 can be formed at the same time as the corresponding layers of a MOSFET.

The reference does not state that the gate dielectric layers 52, 54, 56, and 58 formed at the same time as the corresponding layers of a MOSFET are to have a different thickness than those of the MOSFET. The reference indicates that the thickness of the gate insulating film can determine the maximum capacitance of the capacitor, but does not indicate that a different thickness is to be used for the gate insulating layer of the MOSFET, and especially does not indicate that the varactor gate dielectric layer is to be thinner. Indeed, the reference says that the same steps can be used so one of skill in the art would not add steps that appear to be unnecessary to the manufacturing process. Accordingly, one of skill in the art would not learn from this reference that the gate insulating film of the varactor element is thinner than the thinnest gate insulating film among the gate insulating films of the MOS transistors. Claims dependent from claims 1 and 5 are allowable for the same reasons.

Since the combination does not disclose all that is claimed, claims 1-13, 15-16, 19, and 22 avoid the rejection under §103.

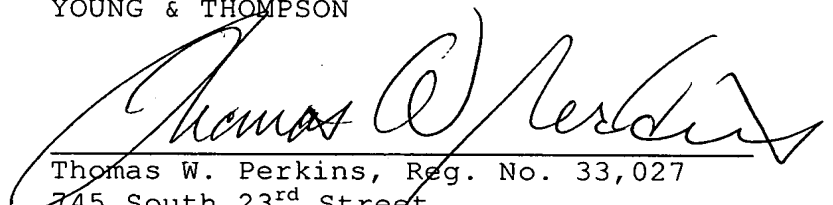
In view of the present amendment and the foregoing remarks, it is believed that the present application has been

placed in condition for allowance. Reconsideration and allowance are respectfully requested.

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

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